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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/581,737	08/11/2006	Masahiko Yoshimoto	KIM-009	8662

32628 7590 02/02/2011

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EXAMINER	
KIM, HEE-YONG	
ART UNIT	PAPER NUMBER
2482	
MAIL DATE	DELIVERY MODE
02/02/2011	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/581,737	YOSHIMOTO ET AL.	
	Examiner	Art Unit	
	HEE-YONG KIM	2482	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *18 November 2010*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *27-30* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *27-30* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. This office action is in reply to Applicant's Response dated November 18, 2010.

2. **Claims 1-26** have been cancelled.

3. **Claims 27-30** have been newly added.

Response to Arguments

4. Regarding **claim 27**, Applicant's arguments with respect to the prior art rejection have been considered but they are not persuasive. Applicant argues (pp.5-8) that Choi and Miyazaki and Megido and Zhao fail to disclose an actual operating frequency exceeding the necessary operating frequency within an operable frequency and most close to the operating frequency. Even though they do not teach this feature explicitly, examiner maintains that Choi discloses the operating frequency and it is a common sense principle to have the actual frequency within the operating frequency and have actual frequency a little bit margin exceeding the necessary operating frequency, in order not to have the actual frequency beyond the operating frequency and have enough frequency to succeed operation in a frame interval.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. **Claims 27-30** are rejected under 35 U.S.C. 103(a) as being unpatentable over Choi (Proceedings of 2002 IEEE international Conference on Computer-Aided Design, pp.732-737) in view of Miyazaki (US 2001/0,048,319), hereafter referenced as Choi and Miyazaki respectively.

Regarding **claim 27**, Choi discloses Frame-Based Dynamic Voltage and Frequency Scaling for a MPEG Decoder. Specifically Choi discloses

A motion picture decoding system (MPEG decoding, pp.732, second col., line 3) for sequentially decoding a motion picture as a unit, the unit being formed of a plurality of successive frames (frame, pp.734, first col., line 1-3), comprising:

necessary operation volume calculating means for calculating an operation volume necessary for encoding or decoding a present frame,

deciding means for deciding operating power-supply voltage and operating frequency (Calculating clock speed and voltage, pp.736, first col.), said deciding means deciding the operating frequency capable of encoding or decoding the operation volume (frame based workload calculation, pp.733-735) necessary for encoding or decoding the present frame within a time (frame interval) allocated in advance, and the operating power- supply voltage and the substrate bias voltage corresponding to the operation frequency, and

a processor (StrongArm-1110, pp.732, second col., 4th paragraph) implemented with MOS transistors (CMOS VLSI, pp.732, first col., Introduction) laminated on a

semiconductor substrate, the processor controlling the operating power-supply voltage and the operating frequency (DVFS (Dynamic Voltage and Frequency Scaling), pp.732, Introduction), wherein the deciding means calculates the operating frequency (Calculating clock speed and voltage, pp.736, first col.) capable of encoding or decoding the operation volume (frame based workload calculation, pp.733-735) necessary for processing the present frame within the allocated time (frame interval) based on the operation volume. Examiner maintains that even though Choi fails to disclose encoder system, the encoder is inverse of decoder and his methodology can be applied to encoder system as well.

However, Choi fails to disclose that the processor selects an actual operating frequency exceeding the necessary operating frequency within an operable frequency and most close to the operating frequency, and decides an actual operating power-supply voltage and an actual substrate bias voltage to make a power consumption minimum to the selected frequency, the processor operating steadily in the present frame with the actual substrate bias voltage, the actual operating power-supply voltage and the actual operating frequency decided by the deciding means while the encoding or decoding means encodes or decodes the present frame.

In the analogous field of endeavor, Miyazaki discloses Semiconductor Integrated Circuit. Miyazaki specifically discloses deciding substrate bias voltage suitable for the operating frequency and permitting the processor to operate steadily (determined on the frequency/supply voltage/substrate bias corresponding table, paragraph 66, and Fig.1),

in order to suppress power consumption at minimum in the range that the proper speed is met (paragraph 66).

Therefore, given this teaching, it would have been obvious to the ordinary person in the art to modify Choi by providing specifically frequency/supply voltage/substrate bias table and substrate bias voltage control circuit, in the order to suppress power consumption at minimum in the range that the proper speed is met. However, Choi and Miyazaki fail to disclose an actual operating frequency exceeding the necessary operating frequency within an operable frequency and most close to the operating frequency.

However, Choi discloses operating frequency (59 MHz to 221 MHz, pp.736, right col.). And it is a common sense principle to have the actual frequency within the operating frequency and have actual frequency a little bit margin exceeding the necessary operating frequency, in order not to have the actual frequency beyond the operating frequency and have enough frequency to succeed operation in a frame interval.

Therefore, given this common sense principle, it would have been obvious to the ordinary person in the art to modify Choi and Miyazaki by providing specifically an actual operating frequency exceeding the necessary operating frequency by some margin within an operable frequency into Miyazaki's frequency/supply voltage/substrate bias table, in order not to have the actual frequency beyond the operating frequency and have enough frequency to succeed operation in a frame interval. The Choi Frame-Based Dynamic Voltage and Frequency Scaling for a MPEG Decoder, incorporating the

Miyazaki frequency/supply voltage/substrate bias table and substrate bias voltage control circuit, further incorporating actual operating frequency exceeding the necessary operating frequency by some margin within an operable into Miyazaki's frequency/supply voltage/substrate bias table, has all the features of claim 27.

Regarding **claim 28,** the Choi Frame-Based Dynamic Voltage and Frequency Scaling for a MPEG Decoder, incorporating the Miyazaki frequency/supply voltage/substrate bias table and substrate bias voltage control circuit, further incorporating actual operating frequency exceeding the necessary operating frequency by some margin within an operable into Miyazaki's frequency/supply voltage/substrate bias table, as applied to claim 27, discloses further comprising failure situation avoiding means for avoiding a failure situation (in order to have enough frequency to succeed operation in a frame interval) which occurs when the necessary operation volume calculated by the necessary operation volume calculating means is smaller than an actual necessary operation volume, the failure situation avoiding means increasing the operation volume calculated by the necessary operation volume calculating means by a prescribed value (further incorporating actual operating frequency exceeding the necessary operating frequency by some margin within an operable into Miyazaki's frequency/supply voltage/substrate bias table).

Regarding **claim 29**, it is a method claim corresponding to the system claim 27. Therefore, it is rejected for the same reason as claim 27.

Regarding **claim 30**, it is a method claim corresponding to the system claim 28. Therefore, it is rejected for the same reason as claim 28.

Conclusion

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to HEE-YONG KIM whose telephone number is (571)270-3669. The examiner can normally be reached on Monday-Thursday, 8:00am-5pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha Banks-Harold can be reached on 571-272-7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/HEE-YONG KIM/
Examiner, Art Unit 2482

/Andy S. Rao/
Primary Examiner, Art Unit 2482
January 31, 2011